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10/808,963	03/25/2004	Narutoshi Fukuzawa	890050.475	6330

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EXAMINER	
SHEN, KEZHEN	

ART UNIT	PAPER NUMBER
2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/808,963	FUKUZAWA ET AL.	
	Examiner	Art Unit	
	Kezhen Shen	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 25 March 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

VU LE
SUPERVISORY PATENT EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present application, claims 1 and 5 recite the broad range/limitation of "Vickers hardness of 30 mgf/μm^2 to 50 mgf/μm^2" whereas claims 2,3,6 and 7 recite the narrower range/limitation of "Vickers hardness of 33 mgf/μm^2 to 50 mgf/μm^2" and

"Vickers hardness of 33 mgf/μm^2 to 42 mgf/μm^2". Thus, claims 2, 3, 6 and 7 read as merely exemplary and are not clear whether they are required or not required as claimed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 4, 5, 8, 9, 10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aratani et al. 6,063,468 in view of Zhou et al. US 2004/0157159 A1.

Regarding claim 1, Aratani et al. teach an optical recording medium comprising a support substrate (Aratani et al. 410 of Fig. 4, Col 6 Line 40-41 substrate), a light transmission layer formed on a side of a light incidence plane through which a laser

beam is projected (Aratani et al. 412 of Fig. 4, Col 6 Line 44-45 light transmissive layer) and which comprises at least one light transmission film (Aratani et al. 414 or 415 of Fig. 4, Col 6 Line 46-50 light transmissive layer is formed of a first or surface, layer and a second layer) and a recording layer located between the support substrate and the light transmission layer (Aratani et al. 411 of Fig. 4, Col 6 Line 44-46 recording film adjacent to light transmissive layer).

Aratani et al. fail to teach the at least one light transmission film having Vickers hardness of 30 mgf/μm^2 to 50 mgf/μm^2 with respect to a load of 200 mgf.

However, Uchiyama et al. make obvious of such range (Uchiyama et al. [0124]). Uchiyama et al disclose preferably a range of 20 kg/mm^2 or greater. The notation used in Uchiyama et al is kg/mm^2 whereas the present application uses mgf/μm^2. However, the conversion of 20 kg/mm^2 is equal to 20 mgf/μm^2. Thus, in Uchiyama, the range of 20 kg/mm^2 or greater would have encompassed the recited range of 30 mgf/μm^2 to 50 mgf/μm^2 as claimed.

Therefore, taking the combined teaching of Aratani and Uchiyama as a whole, it would have been obvious to derive at an optimal range of hardness within the teaching range as taught in Uchiyama for the benefits of mechanical stability and higher recording densities.

The combined teaching of Aratani and Uchiyama fails to teach the recording layer containing an organic dye as a primary component as claimed. However, Official Notice is taken that using an organic dye as a primary component in a recording layer is notoriously well known in the art for the benefit of writing data once to the recording

medium and reading it multiple times. Some examples of such organic dye recording media are CD-R and DVD-R.

Regarding claim 4, the combination of Aratani et al and Uchiyama further teaches an optical recording medium in accordance with claim 1, wherein the at least one light transmission film is formed so as to have a thickness of 0.5 μm to 100 μm (Aratani et al. Col 12 Line 3-4 first layer having a thickness from 0.1 to 10 μm).

Regarding claim 5, the combination of Aratani et al and Uchiyama further teaches an optical recording medium in accordance with claim 1, wherein the second light transmission film located on the side of the light incidence plane through which a laser beam enters (Aratani et al. 414 of Fig. 4). For the rest of the claim, see the rejection as stated in claim 1. Furthermore, while the combined teachings of Aratani et al. and Uchiyama et al. do not teach the specific location of the light transmission films, Official Notice is taken that it is a basic scientific principle to place the two transmission films adjacent to one another without a specific benefit for the placement of the two light transmission films.

Regarding claim 8, the combination of Aratani et al and Uchiyama further teaches an optical recording medium in accordance with claim 5, wherein the first light transmission film so as to have a thickness of 0.5 μm to 100 μm (Aratani et al. Col 12 Line 3-4 thickness from 0.1 to 10 μm).

Regarding claim 9, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 5, but fails to teach wherein the second light transmission film has hardness lower than that of the first light transmission film. However, it does teach a different hardness of the first and second light transmissive layer (Aratani et al. Col 6 Line 48-57 the provision of light transmissive layer formed of two layers of different materials allows for the use of a harder material for surface layer while a softer material, may be used to form the second or internal layer). Official Notice is taken that it is a basic scientific principle to have one light transmission film harder than the other for structural strength and one light transmission film for better optical qualities to combine without a specific benefit for the specific hardness for each of the light transmission film.

Regarding claim 10, the combination of Aratani et al and Uchiyama further teaches an optical recording medium in accordance with claim 5, wherein each of the first light transmission film and the second light transmission film is formed by applying a resin solution using a spin coating process (Aratani et al. Col 12 Line 41-45 light transmissive layer may be applied by spin coat).

Regarding claim 12, the combination of Aratani et al and Uchiyama further teaches an optical recording medium in accordance with claim 1, wherein the thickness of the light transmission layer is equal to or thicker than 10 μm and equal to or thinner

than 300 μm (Aratani et al. Col 6 Line 15-19 light transmissive layer should be provided with a thickness of approximately 150 μm or less).

Regarding claim 13, the combination of Aratani et al and Uchiyama further teaches an optical recording medium in accordance with claim 5, wherein the thickness of the light transmission layer is equal to or thicker than 10 μm and equal to or thinner than 300 μm (Aratani et al. Col 6 Line 15-19 light transmissive layer should be provided with a thickness of approximately 150 μm or less).

6. Claims (14, 16, 18) and (11, 15, 17, 19) are rejected under 35 U.S.C. 103(a) as being unpatentable over Aratani et al in view of Uchiyama as applied to claims 1 and 5 above respectively and further in view of Zhou et al. US 2004/0157159 A1.

Regarding claim 11, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 5, but fails to teach wherein the first light transmission film is constituted as an adhesive layer formed of a light transmittable adhesive agent layer and the second light transmission film is formed by adhering a light transmittable sheet onto the adhesive layer. However, Zhou et al. does. Zhou et al. disclose applying the light transmission layer (Zhou et al. 9 of Fig. 1, [0048] protective layer) to another layer (Zhou et al. 8 of Fig. 1, [0048] ITO layer) by means of an adhesive layer (Zhou et al. 9 and 8 Fig. 1 [0048] the protective layer may also be provided by applying a sheet of polycarbonate by means of a Pressure Sensitive Adhesive layer to the ITO layer).

Taking the combined teaching of Aratani, Uchiyama and Zhou et al as a whole, one skilled in the art would have been motivated to use the application of the Pressure Sensitive Adhesive layer on both the protective layer and the ITO layer and apply to the same principle to the two light transmission film for the benefit of a compound of keeping the two film firmly together.

Regarding claim 14 the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 1, but fails to further teach a reflective layer between the support substrate and the recording layer. However, Zhou et al. does. Zhou et al. teach an optical recording medium which further comprises a reflective layer between the support substrate and the recording layer (Zhou et al. 3 and 6 of Fig. 1, [0046] recording layer and the metal reflective layer).

Therefore, taking the combined teaching of Aratani, Uchiyama and Zhou as a whole, one of ordinary skill in the art would have been motivated to place the reflective layer between the support substrate and the recording layer for the benefit of reflecting the light beam and also to radiate the heat generated by the beam.

Regarding claim 15, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 5, but fails to further teach a reflective layer between the support substrate and the recording layer. However, Zhou et al. does. Zhou et al. teach an optical recording medium which further comprises a

reflective layer between the support substrate and the recording layer (Zhou et al. 3 and 6 of Fig. 1, [0046] recording layer and the metal reflective layer).

Therefore, taking the combined teaching of Aratani, Uchiyama and Zhou as a whole, one of ordinary skill in the art would have been motivated to place the reflective layer between the support substrate and the recording layer for the benefit of reflecting the light beam and also to radiate the heat generated by the beam.

Regarding claim 16, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 1, but fails to further teaches a cap layer between the light transmission layer and the recording layer. However, Zhou et al. does. Zhou et al. discloses a dielectric layer between the light transmission layer and the recording layer (Zhou et al. 7 of Fig. 2, [0049] dielectric layer is present in the recording stack in contact with the recording layer).

Therefore, taking the combined teaching of Aratani, Uchiyama and Zhou as a whole, one of ordinary skill in the art would have been motivated to place a cap layer between the light transmission layer and the recording layer for the benefit of separating the two layers from interfering from one another.

Regarding claim 17, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 5, but fails to further teach a cap layer between the light transmission layer and the recording layer. However, Zhou et al. does. Zhou et al. discloses a dielectric layer between the light transmission layer and

the recording layer (Zhou et al. 7 of Fig. 2, [0049] dielectric layer is present in the recording stack in contact with the recording layer).

Therefore, taking the combined teaching of Aratani, Uchiyama and Zhou as a whole, one of ordinary skill in the art would have been motivated to place a cap layer between the light transmission layer and the recording layer for the benefit of separating the two layers from interfering from one another.

Regarding claim 18, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 1, but fails to teach the cap layer is formed of a dielectric material so as to have thickness of 10 nm to 150 nm. However, Zhou et al. does. Zhou et al. discloses an optical recording medium wherein the cap layer is formed of a dielectric material (Zhou et al. 5 and 7 of Fig. 6, [0053] dielectric layers comprise $(ZnS)_{80}(SiO2)_{20}$)so as to have thickness of 10 nm to 150 nm (Zhou et al. 7 of Fig. 6 [0053] dielectric layer has a thickness of 130 nm).

Therefore, taking the combined teaching of Aratani, Uchiyama and Zhou as a whole, one of ordinary skill in the art would have been motivated to create a dielectric layer with a thickness of 130 nm for the benefit of preventing thermal damage to the recording layer.

Regarding claim 19, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 5, but fails to further teach the cap layer is formed of a dielectric material so as to have thickness of 10 nm to 150 nm.

However, Zhou et al. does. Zhou et al. discloses an optical recording medium wherein the cap layer is formed of a dielectric material (Zhou et al. 5 and 7 of Fig. 6, [0053] dielectric layers comprise $(ZnS)_{80}(SiO2)_{20}$)so as to have thickness of 10 nm to 150 nm (Zhou et al. 7 of Fig. 6 [0053] dielectric layer has a thickness of 130 nm).

Therefore, taking the combined teaching of Aratani, Uchiyama and Zhou as a whole, one of ordinary skill in the art would have been motivated to create a dielectric layer with a thickness of 130 nm for the benefit of preventing thermal damage to the recording layer.

7. Claims (20, 22, 24) and (21, 23, 25) are rejected under 35 U.S.C. 103(a) as being unpatentable over Aratani et al. in view of Uchiyama as applied to claims 1 and 5 above respectively, and further in view of Saito US 2003/0138728 A1.

Regarding claim 20, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 1, but fails to further teach the cap layer is formed of metal so as to have thickness of 10 nm to 20 nm. However, Saito does. Satio discloses an optical recording wherein the cap layer is formed of metal (Satio [0067] the substance of the reflective layer is made of metals such as Ag, Au, In, Si, Ge, Te, Pb, Sn, metalloids and stainless steel) so as to have thickness of 10 nm to 20 nm (Satio [0067] the thickness of the reflective layer is generally 10 to 300 nm). While the applicant does not treat the cap layer as a reflective layer, the purpose of the layer is similar in principle. A small thin metal layer used to separate the light

transmission layer (Satio [0068] protective layer) and the recording layer (Satio [0068] recording layer).

Therefore, taking the combined teaching of Aratani, Uchiyama and Saito as a whole, one of ordinary skill in the art would have been motivated to combine the optical medium from the combined teaching of Aratani and Uchiyama and the cap layer from the teachings of Satio for the benefit of separating the two layers from mixing or interfering with one another.

Regarding claim 21, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 5, but fails to teach wherein the cap layer is formed of metal so as to have thickness of 10 nm to 20 nm. However, Saito does. Satio discloses an optical recording wherein the cap layer is formed of metal (Satio [0067] the substance of the reflective layer is made of metals such as Ag, Au, In, Si, Ge, Te, Pb, Sn, metalloids and stainless steel) so as to have thickness of 10 nm to 20 nm (Satio [0067] the thickness of the reflective layer is generally 10 to 300 nm). While the applicant does not treat the cap layer as a reflective layer, the purpose of the layer is similar in principle. A small thin metal layer used to separate the light transmission layer (Satio [0068] protective layer) and the recording layer (Satio [0068] recording layer).

Therefore, taking the combined teaching of Aratani, Uchiyama and Saito as a whole, one of ordinary skill in the art would have been motivated to combine the optical medium from the combined teaching of Aratani et al and Uchiyama and the cap layer

from the teachings of Satio for the benefit of separating the two layers from mixing or interfering with one another.

Regarding claim 22, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 1, but fails to teach wherein an organic dye contained in the recording layer as a primary component has a refractive index lower than 1.2 or higher than 1.9 with respect to a laser beam having a wavelength of 370 nm to 425 nm and an extinction coefficient equal to or higher than 0.1 and equal to or lower than 1.0 with respect to a laser beam having a wavelength of 370 nm to 425 nm. However, Saito does. Saito teaches an optical recording medium wherein an organic dye contained in the recording layer ([0006] a recording layer comprising a dye) as a primary component has a refractive index lower than 1.2 or higher than 1.9 ([0042] the refractive index (n) respectively in a range of $1.0<n<1.9$) with respect to a laser beam having a wavelength of 370 nm to 425 nm ([0015] a laser having a wavelength no greater than 450 nm) and an extinction coefficient equal to or higher than 0.1 and equal to or lower than 1.0 ([0042] the extinction coefficient (k) respectively in a range of $0.03<k<0.3$) with respect to a laser beam having a wavelength of 370 nm to 425 nm ([0015] a laser having a wavelength no greater than 450 nm).

Therefore, taking the combined teaching of Aratani, Uchiyama and Saito as a whole, one of ordinary skill in the art would have been motivated to use an organic dye in accordance to the specifications as claimed because organic dye optical medium is notoriously well known in the art for the benefit of writing data once to the recording

medium and reading it multiple times. Some examples of such organic dye recording media are CD-R and DVD-R. Official Notice is taken.

Regarding claim 23, the limitations as claimed have been analyzed and rejected with respect to claim 22 above.

Regarding claim 24, the combination of Aratani et al and Uchiyama teaches an optical recording medium in accordance with claim 1, but fails to teach wherein the recording layer contains a porphyrin system dye, a mono-methine cyanine system dye or a tri-methine cyanine system dye as a primary component. However Saito does. Saito teaches an optical recording medium wherein the recording layer contains a porphyrin system dye or a tri-methine cyanine system dye as a primary component ([0006] recording layer comprising a dye such as a prophyrin compound, a trimethynecyanine dye).

Therefore, taking the combined teaching of Aratani, Uchiyama and Saito as a whole, one of ordinary skill in the art would have been motivated to utilized the specific types of dye as a primary component in the optical medium as claimed for the benefit of writing data once to the recording medium and reading it multiple times. Some examples include CD-R and DVD-R.

Regarding claim 25, the limitations as claimed have been analyzed and rejected with respect to claim 24 above.

Examiner's Note

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kezhen Shen whose telephone number is (571) 270-1815. The examiner can normally be reached on Monday - Friday 7:30 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571) 272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kezhen Shen/

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